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PRELIMINARY ECOLOGICAL RISK ASSESSMENT
FOR
SAUGET AREA 2, SITE Q
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD: S05-9703-013
PAN: 7M1301SI

August 31, 1997

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emergency and Enforcement Response Branch
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1. Introduction

The Ecology and Environment, Inc. (E & E) Superfund Technical Assessment and Response Team (START) was tasked by the United States Environmental Protection Agency (U.S. EPA) to prepare a screening-level ecological assessment for Sauget Area 2, Site Q (the site) under the Superfund Removal Program, Technical Direction Document S05-9703-013.

The following report summarizes preliminary findings regarding potential ecological and human health risk at the site. This screening-level ecological assessment is based on information gathered during a site visit on April 17, 1997. The objective of this report is to determine whether the site poses no immediate or long-term ecological risk, or if a potential ecological risk exists and further investigation is necessary. Human health issues will also be considered.

2. Problem Formulation

2.1 Environmental Setting

2.1.1 Site Description

The site is an inactive waste disposal facility formerly operated by Sauget and Company. It is located in west-central St. Clair County, Illinois, directly across the Mississippi River from St. Louis, Missouri. The site is approximately 90 acres; however, this assessment concentrated on a northern and southern ponded area (Figure 2-1). The site is on the river side of a United States Army Corps of Engineers flood control levee, and is therefore, highly flood vulnerable. The ponded areas are also subject to drying out during late summer and other dry times of the year.

The land use of the site and surrounding area is primarily industrial, with some recreation (fishing) nearby. The majority of the site is presently occupied by River Port Fleeting and Eagle Marine, which operate a coal and grain unloading and transfer facility on the property. Large mounds of landscaping mulch, coal, and cinders exist in the northern half of the property. The southern portion of the site is currently unoccupied. Railroad tracks run through the site. Also, some random dumping of household-type waste is evident in the area. Access to the northern portion of the site is restricted by fencing and a 24-hour guard at the main gate. However, access to the southern portion of site is unrestricted. Several sites in the area have been investigated and cleaned by the Illinois Environmental Protection Agency (IEPA), U.S. EPA, and various consultants for the agencies or area industries.

In 1994, State agencies collected and analyzed samples to gather data on areas in and around Site Q that were impacted by flooding in 1993. Samples were collected in November when water levels were down. The results for the southern pond area indicated that hotspots with severe contamination exist. Samples taken from waste piles yielded results as high as 216 parts per million (ppm) arsenic, 2,260 ppm cadmium, 195,000 ppm lead, and 223,000 ppm total polychlorinated biphenyls (PCBs).

2.1.2 Site Assessment

On April 17, 1997, START members Damon Sinars and Donovan Robin conducted a site investigation with U.S. EPA On-Scene Coordinator (OSC) Samuel Borries, U.S. EPA Remedial Project Manager (RPM) Leah Evison, U.S. EPA Ecologist James Chapman, and IEPA Project Manager Paul Takacs. Water levels were much higher during this assessment than in the November 1994 sampling event, restricting sampling in the low-elevation areas.

2.1.3 Sensitive Habitats

During the assessment, U.S. EPA Ecologist Chapman investigated the habitat quality found on the site areas. Some of the findings are summarized below. Photodocumentation is presented in Appendix A.

The northern pond is located just southeast of a coal pile storage area (Figure 2-2). It is highly disturbed with sparse and predominantly weedy vegetation. The pond does not support macrophytes (vascular aquatic plants) or visible algae. The sole signs of aquatic life were water striders. Water striders feed on small insects that fall onto the water surface (Dunn 1996), which means that they are part of a predominantly terrestrial food web. Therefore, the northern pond does not appear to provide viable aquatic habitat. Although the surrounding land is disturbed and weedy, it is utilized by a variety of common birds and mammals, which may use the pond for drinking water.

The area surrounding the southern ponds (Figure 2-2) is also disturbed, but less recently than the northern pond. Open stands of trees have developed and substantial amounts of coarse woody debris have accumulated. The habitat quality is low, but it supports a variety of organisms. The ponds have substantial growths of macropytes and algae, as well as amphibians, fish, and waterfowl. Local fishermen report the presence of catfish and buffalo head. A more detailed list of species identified on both areas of site is presented in Appendix B.

2.1.4 Endangered Species

One federally-listed threatened species is recorded in St. Clair County, the Decurrent False Aster, *Boltonia decurrens*. The preferred habitat of the plant is alluvial prairie and marshland in river floodplains (Herkert 1991). It is unlikely to occur on the site due to the history of extensive disturbance. Since the species flowers in September and October, the present survey provided no

evidence regarding its potential occurrence at the site.

Several state-listed birds are likely to utilize the site. Only the Black-Crowned Night Heron was sighted within two miles of the site:

Black-Crowned Night Heron, *Nycticorax nycticorax* (endangered)
Little Blue Heron, *Florida (=Egretta) caerulea* (endangered)
Snowy Egret, *Egretta thula* (endangered)
Great Egret, *Casmerodius albus* (threatened)
Pied-Billed Grebe, *Podilymbus podiceps* (threatened)

2.2 Chemicals of Concern

2.2.1 Sampling Methods

Eight samples (Q201 through Q208) were taken of the sediment or soil at various locations, two at the northern pond and six in the southern pond area of site (Figure 2-3). Sediment samples were two- or three-point composites obtained using either a corer or shovel, depending on sediment consistency and water depth. Each portion of sample was placed in a stainless steel bowl and thoroughly mixed and placed into a sample jar. Soil samples were collected using a stainless steel trowel to place the material into a sample jar. Sampling equipment/tools were deconned following each use. The samples were sent to Ecology and Environment in Lancaster, New York, for metal, PCB, polyaromatic hydrocarbon (PAH), and total organic carbon (TOC) analyses under analytical TDD S05-9704-807.

2.2.2 Chemicals at the Site

Due to resource limitations, not every parameter was analyzed for every sample. In addition, only detected contaminants are reported in the tables. Analytical results are presented in Appendix C.

The northern pond area and southern pond area are considered separately because they exist in distinct portions of the site and they had different analytical results. Also, soil and sediment data are considered separately due to each having its own guidelines. Even though the water levels fluctuate, if a sample was collected below standing water at the time of sampling, it is considered a sediment sample.

The soil sample data are compared with human health risk-based values for industrial soils (U.S. EPA 1993b), the Netherland and Quebec soil quality guidelines (SQG), and a Hazard Quotient (HQ). The SQG contains Level B criteria and Level C criteria. Level B criteria refer to moderate soil contamination that requires additional study, and Level C criteria refer to threshold values that require immediate cleanup. HQ is a value equal to dose divided by guideline level. The HQ assists in identifying contaminants where severe risk potentially exists.

The sediment sample data are also compared with human health risk-based values for industrial soils (U.S. EPA 1993), the Ontario Sediment Quality Criteria (SQC), and a HQ. SQC defines a Lowest Effect Level (LEL) and a Severe Effect Level (SEL) for individual contaminants, where enough information is available. LEL refers to marginally polluted sediments in which ecotoxic effects become apparent, but the majority of sediment-dwelling organisms are not effected. SEL refers to heavily polluted sediments likely to affect the health of sediment-dwelling organisms.

As mentioned above, two samples were taken in the northern pond area, one soil sample (Q202) and one sediment sample (Q201). The soil metals data for the northern pond (Table 2-1) show that there is no significant contamination. All results are below the risk-based level and SQG values. PCB results exceed the SQG Level B criterion for total PCBs. Risk-based levels are exceeded for two PAHs and two Level B SQGs are exceeded, however, no values are above or near the Level C SQG.

The sediment metals data for the northern pond area (Table 2-2) indicate that there is no significant contamination. Only the arsenic level is elevated beyond the LEL, but it is below the risk-based level and SEL. All other metal results are below the risk-based level and LEL. Three PCB aroclors were detected, all between the LEL and SEL, and below the human risk-based level.

Four soil samples and two sediment samples were taken in the southern pond area. Since the primary goal of this assessment was to screen for ecological risk, the maximum detection value for each contaminant was used.

Table 2-3 shows the soil contamination data for the southern area. The metal levels are below the human risk-based levels, but exceed many of the SQG values. In particular, cadmium,

chromium, lead, and mercury maximum detection results exceed the Level C SQG. The PCB data show low levels, except the 120 ppm of Aroclor 1248 found in sample Q208. This hotspot exceeds the SQGs. PAHs were not detected in the southern soils.

Table 2-4 shows the sediment contamination data for the southern area. The metal levels are below the risk-based level, but three indicate moderate contamination by being between the LEL and SEL. PCB results indicate three aroclors above the LEL, but far below the SEL. PAHs were not detected in the southern sediment samples.

2.2.3 Assumptions and Uncertainty

This assessment is performed with the following conservative assumptions:

1) Area Use Factor is 100%: The organism spends all of its time in the contaminated area, so is constantly exposed;

2) Bioavailability is 100%: Conditions do not limit the uptake or absorption of the contaminant;

3) The most sensitive life stage is present (e.g., early stage); and

4) Species feed entirely on the most contaminated dietary option.

Because this is a screening-level ecological risk assessment, uncertainty is intentionally assumed to be the worst-case scenario in order to not miss contamination that might be present.

2.2.4 Fate, Transport, and Ecotoxicity

A description of the sources, endpoints, and effects of the ecologically important contaminants found on site follows:

- Arsenic. Arsenic (As) is used in alloys, glass, wood preservatives, and pesticides. Pesticides were produced near the site. As an elemental metal, arsenic is highly persistent in air, water, soil, sediment, and all living tissues. Along with the possibility of being transported by runoff, arsenic may be transported via atmospheric fallout (EPA 1978). Arsenic has been shown to strongly bioaccumulate in fish tissues and in freshwater molluscs. Arsenic appears to have relatively moderate aquatic and mammalian toxicity. A major concern with arsenic compounds is their strong mutagenic and carcinogenic potential (Ontario Ministry of the Environment [OMOE] 1992). Acute toxicity, as well as sublethal effects, have been observed in fish and

invertebrates (National Oceanic and Atmospheric Administration [NOAA] 1991).

- Barium. Barium (Ba) is a naturally occurring element. High levels can decrease fecundity.

- Cadmium. Cadmium (Cd) is used principally in electroplating, batteries, pigments, plastic stabilizers, photovoltaic devices, and alloys. It is ubiquitous in the environment. Cadmium is of concern due to its high toxicity and bioavailability. High levels of cadmium are associated with high mortality, reduced growth, inhibited reproduction, and other adverse effects (NOAA 1991).

- Chromium. Chromium (Cr) is used in electroplating, steelmaking, photography, and some chemical syntheses. Chromium has been shown to bioaccumulate in fish (EPA 1978). Chromium inhibits growth in duckweed and algae, and reduces survival and fecundity in benthic macroinvertebrates. It is a carcinogen, teratogen, and mutagen (Eisler 1986).

- Lead. Potential sources of Lead (Pb) include mining, ore processing, smelting, refining, and exhaust emissions from combustion engines. Lead is used in construction material linings, X-ray and atomic radiation protection, storage batteries, solder and lead alloys, ceramics, plastics, electronic devices, and as a gasoline additive. Lead in soil is relatively unavailable to plants, except under acidic conditions, and the majority of the absorbed lead is retained in the root system. Because of the low availability to plants and internal immobility, phytotoxicity is rarely observed (Kabata-Pendias and Pendias 1992). Lead has shown moderate ability to bioaccumulate in fish (OMOE 1992). In animals, lead can modify the function and structure of kidneys, bones, the central nervous system, and the hepatopoietic system (NOAA 1991). Lead poisoning in higher organisms primarily affects hematologic and neurologic processes. Lead can also impair growth, decrease fecundity, and increase mortality rates (Eisler 1988).

- Mercury. Mercury (Hg) is primarily used in electrical apparats, paint manufacturing, industrial instruments, dental preparations, and in the production of chlorine, caustics, catalysts, fungicides, bactericides, and pharmaceuticals. The effects of mercury bioaccumulation in fish and shellfish are well documented, as evident in consumption limitations in areas with mercury contamination. Methylmercury has been shown to be the hazardous form of mercury in edible tissues of fish. Bacteria common to most natural waters have been proven capable of converting many mercury compounds to methylmercury. Therefore, virtually any mercury compound entering water may become a bioaccumulation hazard if the environmental conditions are favorable for methylation (EPA 1978). Mercury displays very high acute toxicity to fish and other aquatic organisms. Mercury is the most toxic trace metal to aquatic organisms and that toxicity is increased in the presence of zinc and lead (NOAA 1991).

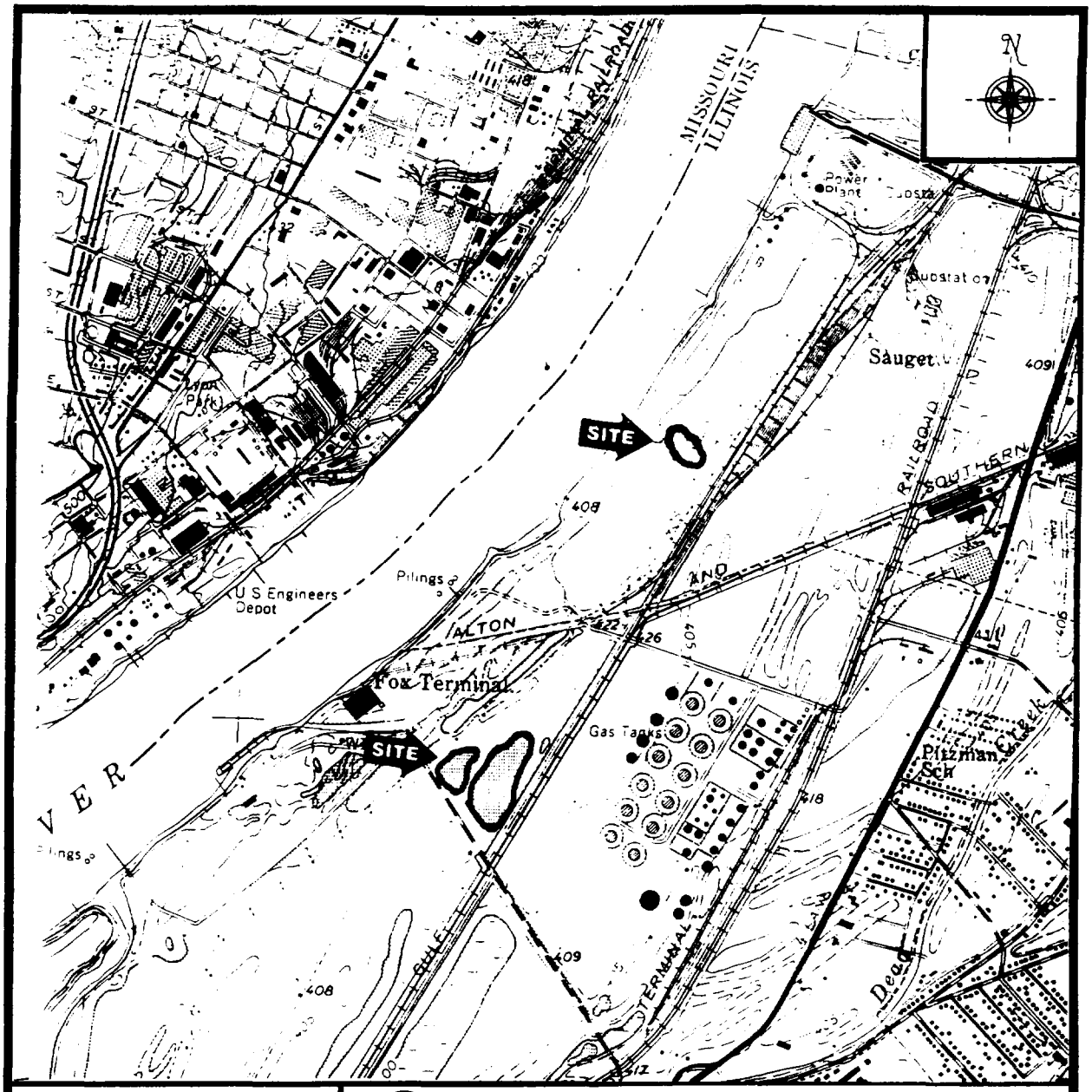
- PCBs. Polychlorinated biphenyls (PCBs) are chlorinated organic compounds that were once used for numerous purposes including as a dielectric fluid in electrical transformers. Current releases are from landfills containing PCB waste material, incineration of PCB-containing materials, and from improper disposal of materials, such as waste transformer fluids. PCBs are highly stable and cycle through the

environment through evaporation, transport, deposition, and reevaporation. PCBs have been reported to bioconcentrate in fish tissues in the range of 1,076 to over 200,000 times. PCBs demonstrate very high acute and chronic toxicity to aquatic orgarisms, are well established as animal carcinogens, and are probable human carcinogens (OMOE 1992).

- PAHs. Polyaromatic hydrocarbons (PAHs) are semivolatile organic pollutants associated with emissions from the burning of fuels. PAHs have been reported to bioconcentrate in fish tissues. A number of PAHs demonstrate very high acute aquatic toxicity to freshwater invertebrates. Chronic aquatic toxicity is also relatively high. Some PAHs (e.g., benzo(a)pyrene) have been shown to be carcinogenic to experimental animals and are thought to be human carcinogens (OMOE 1992).

2.2.5 Interaction

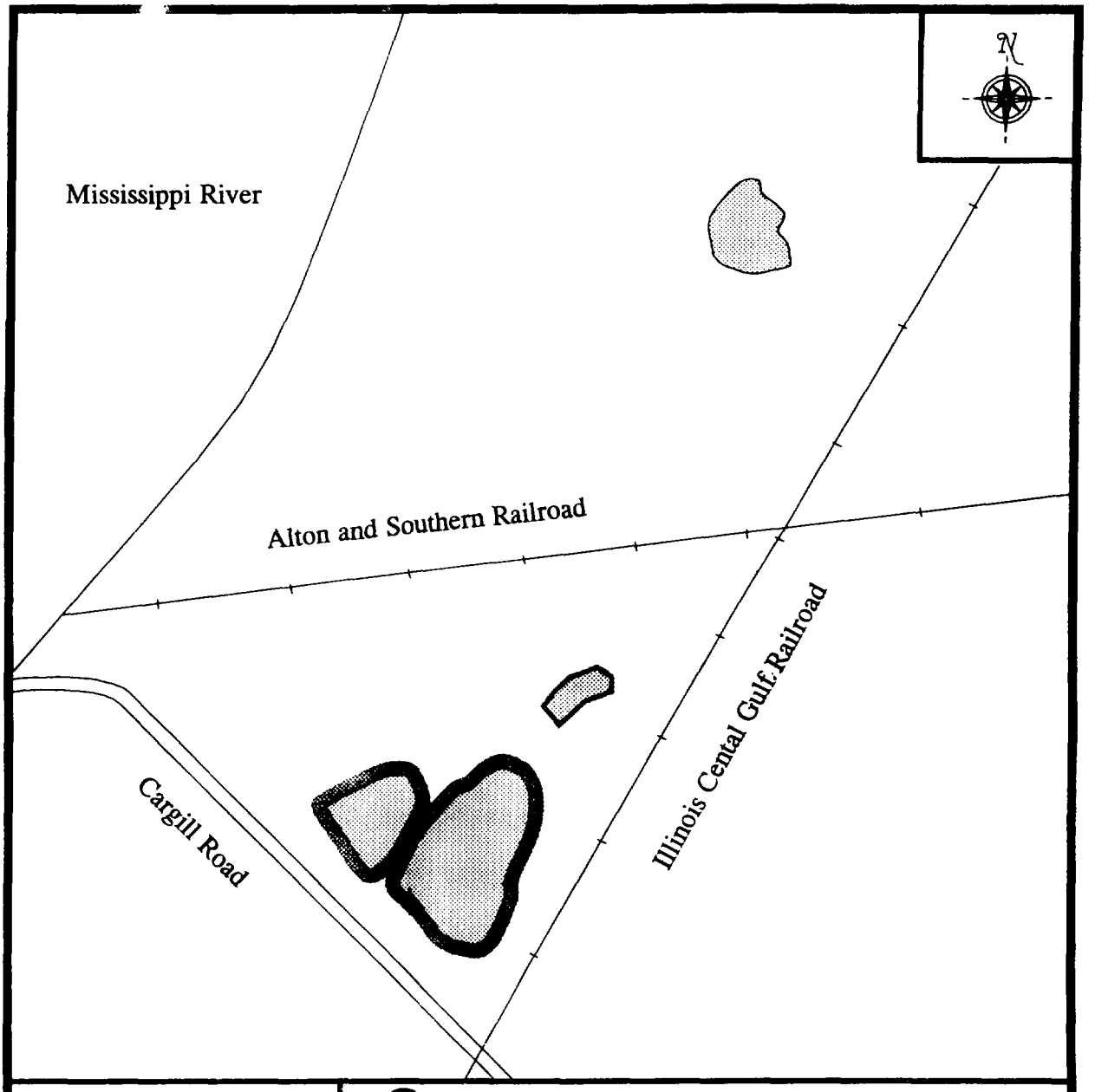
The presence of more than one contaminant may compound the harmful effects on an organism. For example, if a marginal level of lead and a marginal level of mercury both occur in one area, severe harmful effects on organisms may occur. Also, the presence of one contaminant may decrease the effectiveness an organism has with dealing with another contaminant.



Quadrangle Location

ecology and environment, inc.
Superfund Technical Assessment and Response Team
Region 5
33 North Dearborn Street, Chicago, Illinois 60602

TITLE: Site Location Map	FIGURE #: 2-1
SITE: Sauget Area 2	SCALE: 1:24000
CITY: Sauget STATE: Illinois	TDD: S05-9703-013
SOURCE: USGS Topographical Map, 7.5' Series Quadrangle: Cahokia, Illinois	DATE: 1980

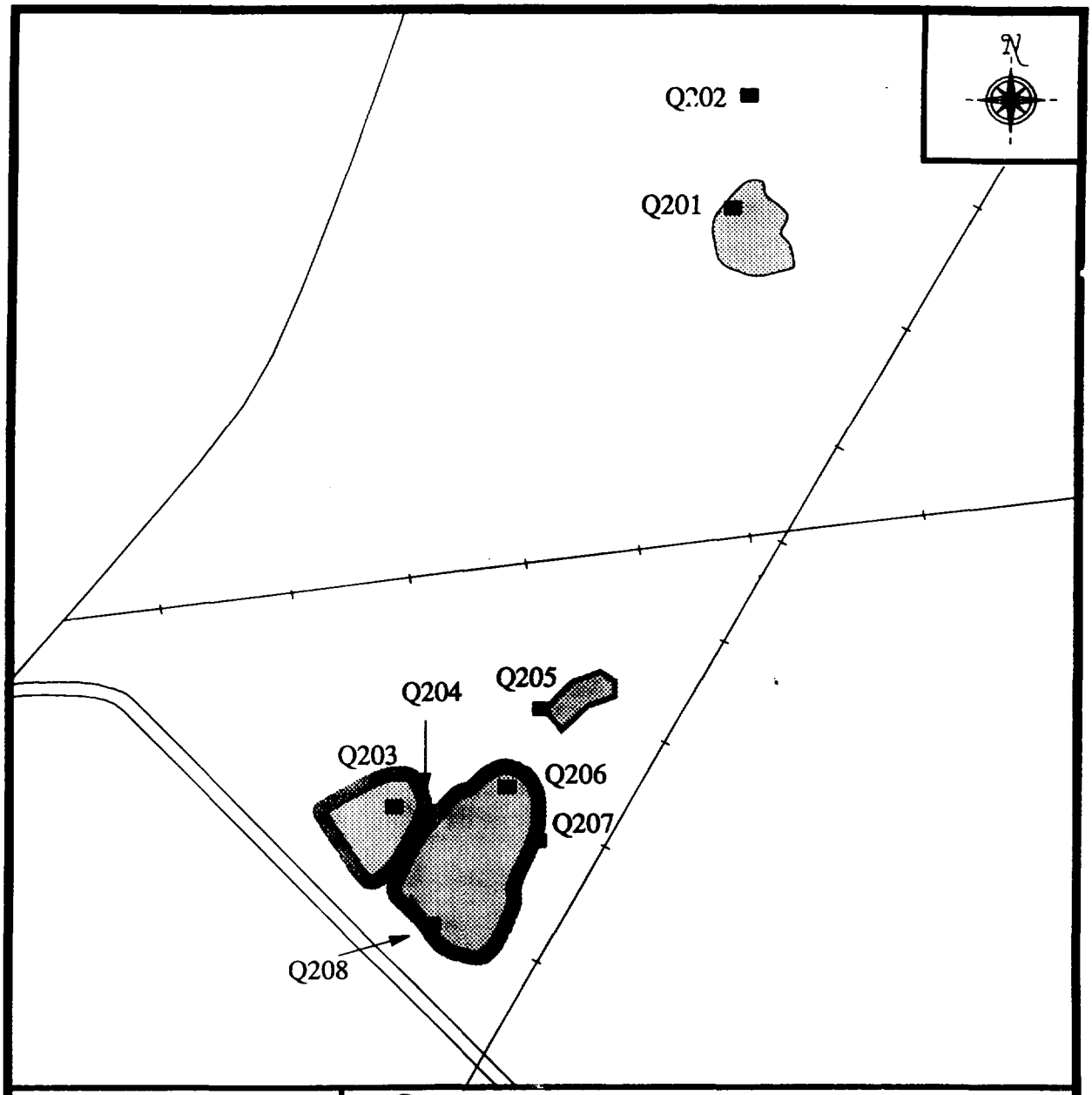


Legend

- Railroad
- Trees and Shrubs
- Wetland

ecology and environment, inc.
Superfund Technical Assessment and Response Team
Region 5
33 North Dearborn Street, Chicago, Illinois 60602

TITLE: Site Features Map	FIGURE #: 2-2
SITE: Sauget Area 2	SCALE: Not to scale
CITY: Sauget STATE: Illinois	TDD: S05-9703-013
SOURCE: Ecology and Environment, Inc.	DATE: 1997



Legend

■ Sample Location

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Superfund Technical Assessment and Response Team
Region 5
33 North Dearborn Street, Chicago, Illinois 60602

TITLE: Sample Location Map	FIGURE #: 2-3
SITE: Sauget Area 2	SCALE: Not to scale
CITY: Sauget STATE: Illinois	TDD: S05-9703-013
SOURCE: Ecology and Environment, Inc.	DATE: 1997

Table 2-1

COMPARISON OF NORTHERN POND SOIL DATA (Q202) WITH NONREGULATORTY SOIL QUALITY GUIDELINES
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997

Parameter	Sample Results (mg/kg)	Risk-Based Level[a] (mg/kg)	SQG (mg/kg)		Hazard Quotient[b] (no units)	
			B	C	B	C
Arsenic	9.4	310	30.0	50.0	0.3	0.2
Barium	232	72,000	400	2000	0.6	0.5
Cadmium	4.4	510	5	20.0	0.9	0.2
Chromium	15.9	5,100	250	800	0.1	0.0
Lead	92.4	NA	150	600	0.6	0.2
Mercury	1.6	310	2.0	10.0	0.8	0.2
Selenium	1.9	5,100	3.0	10.0	0.6	0.2
Silver	0.71	5,100	10.0	40.0	0.1	0.0
PCB-1248	1.7	NA	NA	NA	NA	NA
PCB-1254	1.6	NA	NA	NA	NA	NA
PCB-1260	0.76	NA	NA	NA	NA	NA
Total PCBs	4.06	NA	1.0	10.0	4.1	0.4
Benzo(a)anthracene	1.7	3.9	1.0	10.0	1.7	0.2
Benzo(a)pyrene	1.6	0.39	1.0	10.0	1.6	0.2
Benzo(b)fluoranthene	1.8	3.9	NA	NA	NA	NA
Benzo(g,h,i)perylene	1.2	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1.8	39	NA	NA	NA	NA
Chrysene	2.0	39,000	5.0	50.0	0.4	0.0
Dibenz(a,h)anthracene	0.61	0.39	1.0	10.0	0.6	0.1
Fluoranthene	1.8	41,000	10.0	100	0.2	0.0
Phenanthrene	0.79	NA	5.0	50.0	0.2	0.0
Pyrene	1.9	31,000	10.0	100	0.2	0.0
Total PAHs	16.3	NA	20.0	200	0.8	0.1

Key:
[a] = Human health risk-based concentrations for industrial soil (U.S. EPA 1993b).
[b] = Sample concentration/SQG.
SQG = Soil Quality Guidelines: Based on the Netherland and Quebec soil criteria (Beyer 1990).
B = Refers to moderate soil contamination that requires additional study.
C = Refers to severe soil contamination.
mg/kg = Milligrams per kilogram.
NA = Not available.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

Table 2-2

COMPARISON OF NORTHERN POND SEDIMENT DATA (Q201) WITH NONREGULATORY SEDIMENT QUALITY CRITERIA
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997

Parameter	Sample Results (mg/kg)	Risk-Based Level[a] (mg/kg)	SQC (mg/kg)		Hazard Quotient[b] (no units)	
			LEL	SEL	LEL	SEL
Arsenic	6.9	310	6.0	33.0	1.2	0.2
Barium	191	72,000	NA	NA	NA	NA
Cadmium	0.15	510	0.6	10.0	0.3	0.2
Chromium	10.3	5,100	26.0	110	0.4	0.1
Lead	28.7	NA	31.0	250	0.9	0.1
Mercury	0.18	310	0.2	2.0	0.9	0.1
Selenium	1.0	5,100	NA	NA	NA	NA
Silver	0.36	5,100	NA	NA	NA	NA
PCB-1248	0.48	NA	0.03	150	16.0	0.0
PCB-1254	0.72	NA	0.06	34.0	12.0	0.0
PCB-1260	0.61	NA	0.005	24.0	122	0.0

Key:
[a] = Human health risk-based concentrations for industrial soil (U.S. EPA 1993).
[b] = Sample concentration/SQC.
SQC = Based on the Ontario Provincial Sediment Quality Guidelines (Persaud, et al. 1994).
LEL = Lowest Effect Level: Refers to marginally polluted sediments in which ecotoxic effects become apparent, but the majority of sediment-dwelling organisms are not affected.
SEL = Severe Effect Level: Refers to heavily polluted sediments likely to affect the health of sediment-dwelling organisms.
mg/kg = Milligrams per kilogram.
NA = Not available.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

Table 2-3

COMPARISON OF SOUTHERN SITE SOIL DATA WITH NONREGULATORY SOIL QUALITY GUIDELINES
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997

Parameter	Maximum Detection[a] (mg/kg)	Risk-Based Level[b] (mg/kg)	SQG (mg/kg)		Hazard Quotient[c] (no units)	
			B	C	B	C
Arsenic	32.9	310	30.0	50.0	1.1	0.7
Barium	969	72,000	400	2000	2.4	0.5
Cadmium	139	510	5	20.0	27.8	7.0
Chromium	3900	5,100	250	800	15.6	4.9
Lead	2450	NA	150	600	16.3	4.1
Mercury	12.2	310	2.0	10.0	6.1	1.2
Selenium	8.1	5,100	3.0	10.0	2.7	0.8
Silver	18.7	5,100	10.0	40.0	1.9	0.5
PCB-1248	120	NA	NA	NA	NA	NA
PCB-1254	1.8	NA	NA	NA	NA	NA
PCB-1260	1.8	NA	NA	NA	NA	NA
Total PCBs[d]	120	NA	1.0	10.0	120.0	12.0

Key:
[a] = Refers to the highest level of contaminant detected in the samples collected during the assessment.
[b] = Human health risk-based concentrations for industrial soil (U.S. EPA 1993).
[c] = Sample concentration/SQG.
[d] = Refers to the soil sample with the highest total amount of PCBs (PCB-1248 + PCB-1254 + PCB-1260)(Sample Q208).
SQG = Soil Quality Guidelines: Based on the Netherland and Quebec soil criteria (Beyer 1990).
B = Refers to moderate soil contamination that requires additional study.
C = Refers to severe soil contamination.
mg/kg = Milligrams per kilogram.
NA = Not available.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

Table 2-4

COMPARISON OF SOUTHERN SITE SEDIMENT DATA WITH NONREGULATORY SEDIMENT QUALITY CRITERIA
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997

Parameter	Maximum Detection[a] (mg/kg)	Risk-Based Level[b] (mg/kg)	SQC (mg/kg)		Hazard Quotient[c] (no units)	
			LEL	SEL	LEL	SEL
Arsenic	4.7	310	6.0	33.0	0.8	0.1
Barium	135	72,000	NA	NA	NA	NA
Cadmium	3.2	510	0.6	10.0	5.3	0.3
Chromium	13.3	5,100	26.0	110	0.5	0.1
Lead	139	NA	31.0	250	4.5	0.6
Mercury	0.28	310	0.2	2.0	1.4	0.1
Selenium	1.1	5,100	NA	NA	NA	NA
Silver	1.4	5,100	NA	NA	NA	NA
PCB-1248	2.6	NA	0.03	150	86.7	0.0
PCB-1254	4.2	NA	0.06	34.0	70.0	0.1
PCB-1260	1.9	NA	0.005	24.0	380.0	0.1

Key:
[a] = Refers to the highest level of contaminant detected in the samples collected during the assessment.
[b] = Human health risk-based concentrations for industrial soil (U.S. EPA 1993).
[c] = Sample concentration/SQC.
SQC = Based on the Ontario Provincial Sediment Quality Guidelines (Persaud, et al. 1994).
LEL = Lowest Effect Level: Refers to marginally polluted sediments in which ecotoxic effects become apparent, but the majority of sediment-dwelling organisms are not affected.
SEL = Severe Effect Level: Refers to heavily polluted sediments likely to affect the health of sediment-dwelling organisms.
mg/kg = Milligrams per kilogram.
NA = Not available.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

3. Conclusions and Recommendations

Although the northern pond area is in a relatively isolated industrial area, two PAHs are elevated above the human risk-based level. PAHs are thought to be human carcinogens and bioconcentrate in fish tissue. Also, arsenic, PAH, and PCB results exceed the marginally polluted ecological threshold. Because results are well below the severe contamination levels and relatively few species inhabit the area, the ecological value of the northern pond area is not severely threatened.

In the southern pond area human health risk-based levels were not exceeded. However, metals and PCBs that can bioconcentrate in fish tissue were detected at high levels, and therefore, are threats to human health. The local fishermen who consume their catch may be exposed to chromium, lead, mercury, and PCBs.

Elevated levels of metals and PCBs found in the southern pond area also may be highly detrimental to the ecology of the site. The presence of cadmium, chromium, lead, mercury, and PCBs greater than the severe soil contamination guideline may decrease the species richness of the area. Sensitive species, including the endangered Black-Crowned Night Heron inhabit areas on or near the site and therefore, may be subject to effects such as acute toxicity, reduced growth, inhibited reproduction, and other adverse effects. Finally, species that feed on contaminated organisms may bioaccumulate the contaminants and become adversely affected.

High water levels prohibited samples being obtained where the State found severe contamination. However, these current sample results alone suggest that the site presents a risk to both human health and the environment. When these results are considered in conjunction with the 1994 State's data, a definite need exists for further investigation and possible remediation. It is recommended that another sampling effort and possible removal action take place at the end of

summer or early fall of this year, when the water levels have decreased. Identification of hotspots and the further extent of contamination will provide the necessary information for removal action.

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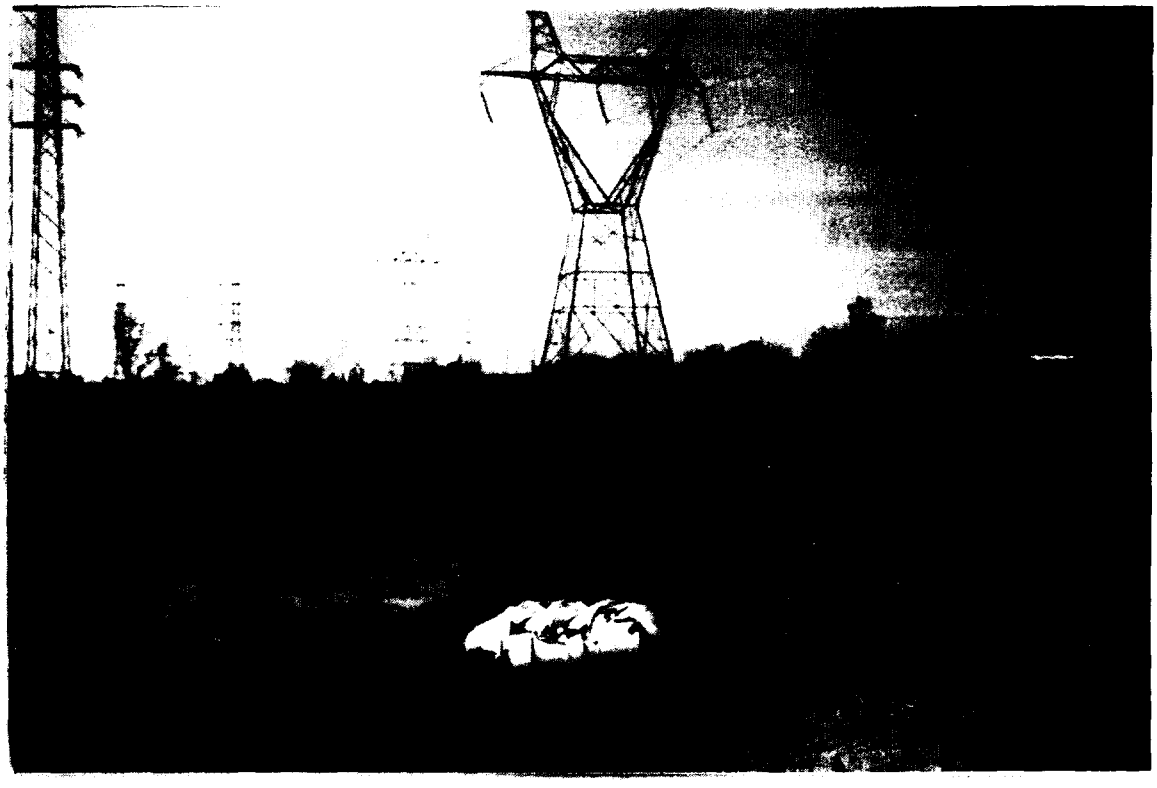
Appendix A

Photodocumentation



SITE NAME: Sauget Area 2 **TDD:** S05-9703-013 **PHOTOGRAPHER:** D. Sinars
DATE: April 17, 1997 **TIME:** 1216 **DIRECTION:** South
SUBJECT: Area of samples Q201 (sediment from pond) and Q202 (soil under brown grass on right).

SITE NAME: Sauget Area 2 **TDD:** S05-9703-013 **PHOTOGRAPHER:** D. Sinars
DATE: April 17, 1997 **TIME:** 1237 **DIRECTION:** North
SUBJECT: Large pond with St. Louis in background.

SITE NAME: Sauget Area 2 **TDD:** S05-9703-013 **PHOTOGRAPHER:** P. Takacs
DATE: April 17, 1997 **TIME:** 1507 **DIRECTION:** Southwest
SUBJECT: START Robin using corer to sample Q206.

SITE NAME: Sauget Area 2 **TDD:** S05-9703-013 **PHOTOGRAPHER:** P. Takacs
DATE: April 17, 1997 **TIME:** 1518 **DIRECTION:** West
SUBJECT: START Robin sampling waste material (sample Q207).

Appendix B

Species List

The following species list was compiled based on observations made by James Chapman, Ph.D., Ecologist, Technical Support Section of Region 5 U.S. EPA, during the assessment of Sauget Area 2, Site Q on April 17, 1997. This is not a comprehensive biological survey. Species listed are the common, obvious species encountered near the site in early spring. Species names are based on the following texts: plants, Gleason and Cronquist 1991; birds, Peterson 1980 and Bohlen 1989; mammals, Kurta 1995; herptiles, Conant and Collins 1991; and insects, Dunn 1996 (see References, Section 4).

Northern Pond

Aquatic Vegetation:

None

Aquatic Insects:

Water Striders, *Gerris* sp.

Herptiles:

None

Aquatic Birds:

None

Terrestrial Vegetation:

Grasses (several species, not identified)
Goosefoot, *Chenopodium* sp.
Knotweed, Smartweed, *Polygonum* spp.
Dock, *Rumex* sp.
Cocklebur, *Xanthium strumarium*
Common Mullein, *Verbascum thapsus*
Common Evening-Primrose, *Oenothera biennis*
Thistle, *Cirsium* sp.
Black-Eyed Susan, *Rubeckia hirta*
Violet, *Viola* sp.

Birds:

Red-Winged Blackbirds, *Agelaius phoeniceus*
Robin, *Turdus migratorius*
Northern Cardinal, *Cardinalis cardinalis*
Field Sparrow, *Spizella pusilla*
Rock Dove, *Columba livia* (large flock by coal piles)

Mammals:

Eastern Cottontail, *Sylvilagus floridanus*
White-Tailed Deer, *Odocoileus virginianus* (tracks)
Domestic Dog, *Canis familiaris* (tracks)

Although not observed, rodents, fox, and coyote probably use this area as well.

Southern Ponds

The species listed for the northern pond occur in this area as well but are not listed again; Only the additional species are included below:

Aquatic Vegetation:

Water Weed, *Elodea* sp.
Cursed Crowfoot, *Ranunculus sceleratus* (tentative identification)
Greater Duckweed, *Spirodela polyhiza*
Several other species of macrophytes were observed but not identified.
Unidentified filamentous green algae and periphyton

Herptiles:

Chorus Frog, *Pseudacris trisseriata* (calls)
Unidentified tadpoles were frequently observed in the shallows.

Aquatic Birds:

American Coot, *Fulica americana*
Other birds reported to have been seen previously include:
Great Blue Heron, *Ardea herodias*
Egret - probably Great or Snowy Egrets or immature Little Blue Heron (Bohlen 1989).
The ponds are probably utilized by other waterfowl.

Riparian/Terrestrial Vegetation:

Cottonwood, *Populus deltoides*
Willow, *Salix* spp.

Birds:

Common Flicker, *Colaptes auratus*
Kestrel, *Falco sparverius*
Wild Turkey, *Meleagris gallopavo*

Appendix C

Analytical Results

- Data Summary Tables
  - C-1: Metal Data Summary
  - C-2: PCB Data Summary
  - C-3: PAH Data Summary
- Data Validation Memoranda
- Laboratory Analytical Package

Table C-1

METALS DATA SUMMARY
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997
(units = mg/kg)

Sample	Parameter							
	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Q201	6.9	191	0.15	10.3	28.7	0.18	1.0	0.36
Q202	9.4	232	4.4	15.9	92.4	1.6	1.9	0.71
Q203	4.7	135	1.2	11.0	128	0.08	1.1	1.4
Q204	32.9	969	20.8	125	2450	0.42	0.62	18.7
Q205	4.8	128	5.0	304	162	0.15	1.3	0.40
Q206	3.4	70.6	3.2	13.3	139	0.28	0.76	0.37
Q207	7.3	169	0.67	17.4	47.8	0.16	1.4	0.32
Q208	0.19	416	139	3900	2300	12.2	8.1	0.80

Key:
mg/kg = Milligrams per kilogram.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

Table C-2

PCB DATA SUMMARY
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997
(units = mg/kg)

Sample	Parameter		
	PCB-1254	PCB-1248	PCB-1260
Q201	0.72	0.48	0.61
Q202	1.7	1.6	0.76
Q203	0.088	ND	0.11
Q204	1.8	0.92	1.1
Q205	0.034	ND	0.028
Q206	4.2	2.6	1.9
Q207	1.6	ND	1.8
Q208	ND	120	ND

Key:
mg/kg = Milligrams per kilogram.
ND = Non detect.

Source: Ecology and Environment, Inc., Lancaster, New York; Analytical TDD S05-9704-807.

Table C-3

PAH DATA SUMMARY
SAUGET AREA 2
SAUGET, ILLINOIS
APRIL 17, 1997
(units = mg/kg)

Parameter	Q202
Phenanthrene	0.79
Fluroranthene	1.80
Pyrene	1.90
Benzo(a)anthracene	1.70
Chrysene	2.00
Benzo(b)fluoranthene	1.80
Benzo(k)fluoranthene	1.80
Benzo(a)pyrene	1.60
Indeno(1,2,3-cd)pyrene	1.10
Dibenz(a,h)anthracene	0.61
Benzo(g,h,i)perylene	1.20

Key:
mg/kg = Milligrams per kilogram.
NA = Not available.

Source: Ecology and Environment, Inc., Lancaster, New York;
Analytical TDD S05-9704-807.

ecology and environment, inc.
International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

M E M O R A N D U M

DATE: May 16, 1997

TO: Damon Sinars, START Project Manager, E & E, Chicago, Illinois

FROM: Lisa Graczyk, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Resource Conservation and Recovery Act (RCRA) Metals, Sauget Area 2, Sauget, St. Clair County, Illinois

REFERENCE: Project TDD S05-9703-013 Analytical TDD S05-9704-807
Project PAN 7M1301TEXX Analytical PAN 7AAG01TAXX

The data quality assurance (QA) review of eight sediment samples collected from the Sauget Area 2 site is complete. The samples were collected on April 17, 1997, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to E & E, Analytical Services Center, Lancaster, New York, for analyses. The laboratory analyses were performed according to the following U.S. EPA solid Waste 846 Methods: 3050A for sample digestion; 6010A for arsenic, barium, cadmium, chromium, lead, selenium and silver; and 7471A for mercury.

Sample Identification

START Identification No.	Laboratory Identification No.
Q201	65106
Q202	65107
Q203	65108
Q204	65109
Q205	65110
Q206	65111
Q207	65112
Q208	65113

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on April 17, 1997, and analyzed on May 1 and 2, 1997. This is within the six month holding time limit (28 days for mercury).

II. Calibration:

- Initial Calibration: Acceptable

  Recoveries for the initial calibration verification were within 90 to 110% (80 to 120% for mercury), as required.

- Continuing Calibration: Acceptable

  All analytes included in the continuing calibration verification standard were within 90 to 110% (80 to 120% for mercury), as required.

III. Blanks: Acceptable

Calibration and preparation blanks were analyzed with each analytical batch. No target analytes were detected in the blanks. At least one blank was analyzed for each 20 samples.

IV. Interference Check Samples (ICSs): Acceptable

ICSs were analyzed and recoveries were acceptable.

V. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.

START - CHICAGO

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q201

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65106

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _69.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	6.9		E	P
7440-39-3	Barium	191		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.15	B		P
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.3		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	28.7		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	1.0			P
7440-22-4	Silver	0.36	U		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q201_____

START - CHICAGO

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q202

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65107

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _53.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	9.4		E	P
7440-39-3	Barium	232		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	4.4			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	15.9		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	92.4		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	1.6			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	1.9			P
7440-22-4	Silver	0.71	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q202_____

START - CHICAGO

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q203

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65108

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _64.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	4.7		E	P
7440-39-3	Barium	135		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	1.2			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	11.0		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	128		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.08			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	1.1			P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q203_____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q204

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65109

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _80.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_		_		NR
7440-36-0	Antimony_		_		NR
7440-38-2	Arsenic__	32.9	_	E	P_
7440-39-3	Barium___	969	_	EN	P_
7440-41-7	Beryllium		_		NR
7440-43-9	Cadmium__	20.8	_		P_
7440-70-2	Calcium__		_		NR
7440-47-3	Chromium_	125	_	E	P_
7440-48-4	Cobalt___		_		NR
7440-50-8	Copper___		_		NR
7439-89-6	Iron_____		_		NR
7439-92-1	Lead_____	2450	_	E	P_
7439-95-4	Magnesium		_		NR
7439-96-5	Manganese		_		NR
7439-97-6	Mercury__	0.42	_		CV
7440-02-0	Nickel___		_		NR
7440-09-7	Potassium		_		NR
7782-49-2	Selenium_	0.62	U		P_
7440-22-4	Silver___	18.7	_		P_
7440-23-5	Sodium___		_		NR
7440-28-0	Thallium_		_		NR
7440-62-2	Vanadium_		_		NR
7440-66-6	Zinc_____		_		NR
_____	_____		_		__
_____	_____		_		__

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q204_____

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q205

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65110

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _61.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	4.8		E	P
7440-39-3	Barium	128		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	5.0			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	304		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	162		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	1.3			P
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q205_____

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q206

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65111

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _66.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	3.4		E	P
7440-39-3	Barium	70.6		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	3.2			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	13.3		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	139		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.37	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q206_____

_____

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_____

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q207

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65112

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _76.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	7.3		E	P
7440-39-3	Barium	169		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.67			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	17.4		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	47.8		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q207_____

START - CHICAGO

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Q208

Lab Name: ECOLOGY_AND_ENVIRONMENT__ Contract: _____

Lab Code: EANDE_ Case No.:9700.860 SAS No.: _____ SDG No.: 65106_

Matrix (soil/water): SOIL_ Lab Sample ID: 65113

Level (low/med): LOW__ Date Received: 04/22/97

% Solids: _94.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	0.19	U	E	P
7440-39-3	Barium	416		EN	P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	139			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	3900		E	P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2300		E	P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	12.2			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	8.1			P
7440-22-4	Silver	0.80	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

Color Before: _____ Clarity Before: _____ Texture: F_____

Color After: Y_____ Clarity After: C_____ Artifacts: _____

Comments:

_____STATION_LOCATION#:__Q208_____

FORM I - IN ILM03.0

ecology and environment, inc.
International Specialists in the Environment

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Chicago Illinois 60602
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M E M O R A N D U M

DATE: May 19, 1997

TO: Damon Sinars, START Project Manager, E & E, Chicago, Illinois

FROM: Lisa Graczyk, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Polychlorinated Biphenyls (PCBs), Sauget Area 2, Sauget, St. Clair County, Illinois

REFERENCE: Project TDD S05-9703-013 Analytical TDD S05-9704-807
Project PAN 7M1301TEXX Analytical PAN 7AAG01TAXX

The data quality assurance (QA) review of eight sediment samples collected from the Sauget Area 2 site is complete. The samples were collected on April 17, 1997, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to E & E, Analytical Services Center, Lancaster, New York. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8081.

Sample Identification

START Identification No.	Laboratory Identification No.
Q201	65106
Q202	65107
Q203	65108
Q204	65109
Q205	65110
Q206	65111
Q207	65112
Q208	65113

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on April 17, 1997, extracted on April 25, 1997, and analyzed on May 3 and 6, 1997. This is within the 14-day holding time limit, from collection to extraction, and 40-day limit from extraction to analysis.

II. Instrument Performance: Acceptable

The chromatographic resolution was adequate in the standard and sample chromatograms. Surrogate retention times were consistent in the samples and standards.

III. Calibrations:

• Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. The coefficient of determination averaged 0.995 or higher for PCB peaks in the initial calibration.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 15%.

IV. Blank: Acceptable

A method blank was analyzed with the sample. No target compounds or contaminants were detected in the blank.

V. Compound Identification: Acceptable

Detected PCBs in the samples appeared to match the "fingerprint" pattern of the standard chromatograms and were confirmed on a second GC column.

VI. Additional QC Checks: Qualified

The surrogate recovery in sample Q202 was very low, 8.7%. Both the positive results and non-detects are to be flagged as estimated or "J". In samples Q201 and Q207, the surrogate recoveries were high, 342% and 181% respectively. Positive PCB results are to be flagged as estimated or "J" in these samples.

VII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 7.0, PCBs. Based upon the information provided, the data are acceptable for use with the above stated qualifications.

Data Qualifiers and Definitions:

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or quality control criteria were not met.

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 70 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65106 MATRIX : SOLID
SAMPLE ID CLIENT: Q201

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.14
PCB-1254	0.72		0.14
PCB-1221	ND		0.28
PCB-1232	ND		0.14
PCB-1248	0.48		0.14
PCB-1260	0.61		0.14
PCB-1016	ND		0.14

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 54 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65107 MATRIX : SOLID
SAMPLE ID CLIENT: Q202

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.37
PCB-1254	1.7		0.37
PCB-1221	ND		0.74
PCB-1232	ND		0.37
PCB-1248	1.6		0.37
PCB-1260	0.76		0.37
PCB-1016	ND		0.37

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 64 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65108 MATRIX : SOLID
SAMPLE ID CLIENT: Q203

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.031
PCB-1254	0.088		0.031
PCB-1221	ND		0.062
PCB-1232	ND		0.031
PCB-1248	ND		0.031
PCB-1260	0.11		0.031
PCB-1016	ND		0.031

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SORGMAT1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
TEST NAME : ORGANIC MATTER % UNITS : %
PARAMETER : Organic Matter %

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-97-65106			
Q201	4.0		1.0
EE-97-65107			
Q202	11		1.0
EE-97-65108			
Q203	5.2		1.0
EE-97-65111			
Q206	10		1.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 80 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65109 MATRIX : SOLID
SAMPLE ID CLIENT: Q204

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.25
PCB-1254	1.8		0.25
PCB-1221	ND		0.50
PCB-1232	ND		0.25
PCB-1248	0.92		0.25
PCB-1260	1.1		0.25
PCB-1016	ND		0.25

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 66 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65111 MATRIX : SOLID
SAMPLE ID CLIENT: Q206

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.61
PCB-1254	4.2		0.61
PCB-1221	ND		1.2
PCB-1232	ND		0.61
PCB-1248	2.6		0.61
PCB-1260	1.9		0.61
PCB-1016	ND		0.61

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 62 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65110 MATRIX : SOLID
SAMPLE ID CLIENT: Q205

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.032
PCB-1254	0.034		0.032
PCB-1221	ND		0.064
PCB-1232	ND		0.032
PCB-1248	ND		0.032
PCB-1260	0.028	J	0.032
PCB-1016	ND		0.032

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65112 MATRIX : SOLID
SAMPLE ID CLIENT: Q207

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		0.26
PCB-1254	1.6		0.26
PCB-1221	ND		0.53
PCB-1232	ND		0.26
PCB-1248	ND		0.26
PCB-1260	1.8		0.26
PCB-1016	ND		0.26

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

TEST CODE :SPCB 1 JOB NUMBER :9700.860
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : START - CHICAGO
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8081 PCB UNITS : MG/KG
SAMPLE ID LAB : EE-97-65113 MATRIX : SOLID
SAMPLE ID CLIENT: Q208

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		11
PCB-1254	ND		11
PCB-1221	ND		21
PCB-1232	ND		11
PCB-1248	120		11
PCB-1260	ND		11
PCB-1016	ND		11

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

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DATE: May 19, 1997

TO: Damon Sinars, START Project Manager, E & E, Chicago, Illinois

FROM: Lisa Graczyk, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Polynuclear Aromatic Hydrocarbons (PAH), Sauget Area 2, Sauget, St. Clair County, Illinois

REFERENCE: Project TDD S05-9703-013 Analytical TDD S05-9704-807
Project PAN 7M1301TEXX Analytical PAN 7AAG01TAXX

The data quality assurance (QA) review of six sediment samples collected from the Sauget Area 2 site is complete. The samples were collected on April 17, 1997, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The sample was submitted to E & E, Analytical Services Center, Lancaster, New York, for analyses. The laboratory analyses were performed according to the U.S. EPA solid Waste 846 Method 8270.

Sample Identification

START Identification No.	Laboratory Identification No.
Q201	65106
Q202	65107
Q203	65108
Q206	65111
Q207	65112
Q208	65113

Data Qualifications:

I. Sample Holding Time: Acceptable

The sample were collected on April 17, 1997. The samples were extracted on April 28, 1997 and analyzed on May 1, 1997. This is within the 14-day holding time limit, from collection to extraction, and 40-day limit from extraction to analysis.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

GC/MS tuning to meet ion abundance criteria using decaflurotriphenylphosphine (DFTPP) were acceptable and samples were analyzed within 12 hours of DFTPP tuning.

III. Calibrations:

• Initial Calibration: Acceptable

A six-point initial calibration was performed prior to analysis. All target compounds had a relative response factor of at least 0.05. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all target compounds.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Acceptable

The mass spectrums and retention times of the detected compounds matched those of the standards.

VII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0, BNAs by GC/MS Analysis. Based upon the information provided, the data are acceptable for use.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q201

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65106

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3174

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 30 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	470	U
91-57-6	2-Methylnaphthalene	470	U
91-58-7	2-Chloronaphthalene	470	U
208-96-8	Acenaphthylene	470	U
83-32-9	Acenaphthene	470	U
86-73-7	Fluorene	470	U
85-01-8	Phenanthrene	110	J
120-12-7	Anthracene	470	U
206-44-0	Fluoranthene	250	J
129-00-0	Pyrene	230	J
56-55-3	Benzo(a)Anthracene	200	J
218-01-9	Chrysene	240	J
205-99-2	Benzo(b)Fluoranthene	340	J
207-08-9	Benzo(k)Fluoranthene	180	J
50-32-8	Benzo(a)Pyrene	170	J
193-39-5	Indeno(1,2,3-cd)Pyrene	100	J
53-70-3	Dibenz(a,h)Anthracene	470	U
191-24-2	Benzo(g,h,i)Perylene	120	J

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q202

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65107

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3164

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 46 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	210	J
91-57-6	2-Methylnaphthalene	270	J
91-58-7	2-Chloronaphthalene	610	U
208-96-8	Acenaphthylene	610	U
83-32-9	Acenaphthene	90	J
86-73-7	Fluorene	94	J
85-01-8	Phenanthrene	790	
120-12-7	Anthracene	140	J
206-44-0	Fluroranthene	1800	
129-00-0	Pyrene	1900	
56-55-3	Benzo(a)Anthracene	1700	
218-01-9	Chrysene	2000	
205-99-2	Benzo(b)Fluoranthene	1800	
207-08-9	Benzo(k)Fluoranthene	1800	
50-32-8	Benzo(a)Pyrene	1600	
193-39-5	Indeno(1,2,3-cd)Pyrene	1100	
53-70-3	Dibenz(a,h)Anthracene	610	
191-24-2	Benzo(g,h,i)Perylene	1200	

(1) - Cannot be separated from Diphenylamine

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q203

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65108

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3165

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 36 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	520	U
91-57-6	2-Methylnaphthalene	520	U
91-58-7	2-Chloronaphthalene	520	U
208-96-8	Acenaphthylene	520	U
83-32-9	Acenaphthene	520	U
86-73-7	Fluorene	520	U
85-01-8	Phenanthrene	520	U
120-12-7	Anthracene	520	U
206-44-0	Fluoranthene	73	J
129-00-0	Pyrene	75	J
56-55-3	Benzo(a)Anthracene	520	U
218-01-9	Chrysene	68	J
205-99-2	Benzo(b)Fluoranthene	280	J
207-08-9	Benzo(k)Fluoranthene	520	U
50-32-8	Benzo(a)Pyrene	57	J
193-39-5	Indeno(1,2,3-cd)Pyrene	520	U
53-70-3	Dibenz(a,h)Anthracene	520	U
191-24-2	Benzo(g,h,i)Perylene	520	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q206

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65111

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3177

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 34 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	500	U
91-57-6	2-Methylnaphthalene	500	U
91-58-7	2-Chloronaphthalene	500	U
208-96-8	Acenaphthylene	500	U
83-32-9	Acenaphthene	500	U
86-73-7	Fluorene	500	U
85-01-8	Phenanthrene	500	U
120-12-7	Anthracene	500	U
206-44-0	Fluoranthene	72	J
129-00-0	Pyrene	64	J
56-55-3	Benzo(a)Anthracene	500	U
218-01-9	Chrysene	52	J
205-99-2	Benzo(b)Fluoranthene	250	J
207-08-9	Benzo(k)Fluoranthene	500	U
50-32-8	Benzo(a)Pyrene	500	U
193-39-5	Indeno(1,2,3-cd)Pyrene	500	U
53-70-3	Dibenz(a,h)Anthracene	500	U
191-24-2	Benzo(g,h,i)Perylene	500	U

(1) - Cannot be separated from Diphenylamine

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q207

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65112

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3178

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 24 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	430	U
91-57-6	2-Methylnaphthalene	430	U
91-58-7	2-Chloronaphthalene	430	U
208-96-8	Acenaphthylene	430	U
83-32-9	Acenaphthene	430	U
86-73-7	Fluorene	430	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	49	J
56-55-3	Benzo(a)Anthracene	430	U
218-01-9	Chrysene	430	U
205-99-2	Benzo(b)Fluoranthene	210	J
207-08-9	Benzo(k)Fluoranthene	430	U
50-32-8	Benzo(a)Pyrene	430	U
193-39-5	Indeno(1,2,3-cd)Pyrene	430	U
53-70-3	Dibenz(a,h)Anthracene	430	U
191-24-2	Benzo(g,h,i)Perylene	430	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q208

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9700.860 SAS No.: SDG No.: 65106

Matrix: (soil/water) SOIL Lab Sample ID: 65113

Sample wt/vol: 30.0 (g/mL) G Lab File ID: B3180

Level: (low/med) LOW Date Received: 04/22/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 04/28/97

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 05/01/97

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	Naphthalene	3500	J
91-57-6	2-Methylnaphthalene	11000	U
91-58-7	2-Chloronaphthalene	11000	U
208-96-8	Acenaphthylene	11000	U
83-32-9	Acenaphthene	11000	U
86-73-7	Fluorene	11000	U
85-01-8	Phenanthrene	11000	U
120-12-7	Anthracene	11000	U
206-44-0	Fluoranthene	11000	U
129-00-0	Pyrene	11000	U
56-55-3	Benzo(a)Anthracene	11000	U
218-01-9	Chrysene	11000	U
205-99-2	Benzo(b)Fluoranthene	11000	U
207-08-9	Benzo(k)Fluoranthene	11000	U
50-32-8	Benzo(a)Pyrene	11000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	11000	U
53-70-3	Dibenz(a,h)Anthracene	11000	U
191-24-2	Benzo(g,h,i)Perylene	11000	U

(1) - Cannot be separated from Diphenylamine

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M E M O R A N D U M

DATE: May 21, 1997

TO: Damon Sinars, START Project Manager, E & E, Chicago, Illinois

FROM: Lisa Graczyk, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Miscellaneous Data Quality Review for Percent Organic Matter, Sauget Area 2, Sauget, St. Clair County, Illinois

REFERENCE: Project TDD S05-9703-013 Analytical TDD S05-9704-807
Project PAN 7M1301TEXX Analytical PAN 7AAG01TAXX

The data quality assurance (QA) review of four sediment samples collected from the Sauget Area 2 site is complete. The samples were collected on April 17, 1997, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to E & E, Analytical Services Center, Lancaster, New York. The laboratory analyses were performed according to the American Society for Testing and Materials (ASTM) method D 2974-71.

Note that total organic carbon analysis was requested but could not be performed due to the high organic content in the samples.

Sample Identification

START Identification No.	Laboratory Identification No.
Q201	65106
Q202	65107
Q203	65108
Q206	65111

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on April 17, 1997 and analyzed on May 5, 1997. The Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) and the ASTM method does not provide a holding time for this parameter.

II. Calibrations: Not Applicable

There is no calibration necessary for this procedure. It is not an instrumental method.

III. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in Data Validation Procedures, Section 9.0, Generic Data Validation Procedures as stated in OSWER Directive 9360.4-01 (April 1990). Based upon the information provided, the data are acceptable for use.